Sprayable Thermal Insulation for Cryogenic Tanks, Phase I

Completed Technology Project (2006 - 2006)

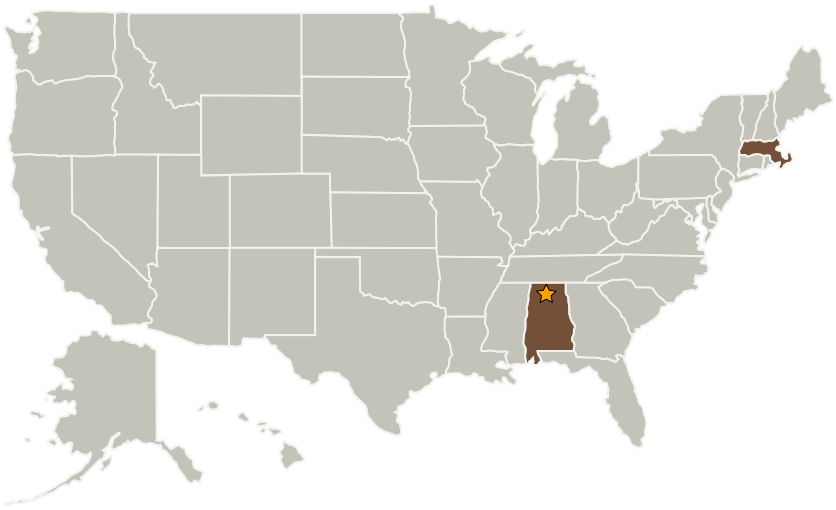
Project Introduction

The innovation addressed in this proposal is Sprayable Thermal Insulation for Cryogenic Tanks, or STICT. This novel system could be applied in either an automated or manual spraying process, with much less sensitivity to process chemistry and environmental parameters than cur-rent spray-on foam insulation (SOFI) products like BX-265, while providing better insulation performance. The resulting material would form an aerodynamically smooth, uniform coating with better cohesion and significantly lower thermal conductivity. This would allow thinner layers of insulation which, when combined with greater material strain-to-failure, will eliminate the generation of in-flight debris. In this way, the proposed CryoGel insulation can render future space transportation systems safer and more reliable.

Anticipated Benefits

Potential NASA Commercial Applications: STICT would compete against polyurethane and polyisocyanurate foams anywhere consistency, high quality, and low thermal conductivity are valued. Some examples of this would be subsea oil and gas pipelines, fuel cell systems, and LNG transport ships.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Aspen Aerogels, Inc.	Supporting Organization	Industry	Northborough, Massachusetts

Primary U.S. Work Locations	
Alabama	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Duan L Ou

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.4 Ground Testing & Operations